Reading 77

Communicating with the Future

In the 1980s the United States Department of Energy was looking for suitable sites to bury radioactive waste material generated by its nuclear energy programs. The government was considering burying the dangerous waste in deep underground **chambers** in remote desert areas. The problem, however, was that nuclear waste remains highly radioactive for thousands of years. The commission entrusted with tackling the problem of waste disposal was aware that the dangers posed by radioactive emissions must be communicated to our descendants of at least 10,000 years hence. So the task became one of finding a way to tell future societies about the risk posed by these deadly deposits.

Of course, human society in the distant future may be well aware of the hazards of radiation. [A] Technological advances may one day provide solutions to this dilemma. [B] But the belief in constant technological advancement is based on our perceptions of advances made throughout history and prehistory. [C] We cannot be sure that society won't have slipped backward into an age of barbarism* due to any of several catastrophic events, whether the result of nature such as the onset of a new ice age or perhaps humankind's failure to solve the **scourges** of war and pollution. [D] In the event of global catastrophe, it is quite possible that humans of the distant future will be on the far side of a broken link of communication and technological understanding.

The problem then becomes how to inform our descendants that they must avoid areas of potential radioactive seepage* given that they may not understand any currently existing language and may have no historical or cultural memory. So, any message dedicated to future reception and decipherment must be as universally understandable as possible. It was soon realized by the specialists assigned the task of devising the communication system that any material in which the message was written might not physically endure the great lengths of time demanded. The second law of thermodynamics shows that all material disintegrates over time. Even computers that might carry the message cannot be expected to endure long enough. Besides, electricity supplies might not be available in 300 generations. Other media storage methods were considered and rejected for similar reasons.

The task force under the linguist Thomas Sebeok finally agreed that no foolproof way would be found to send a message across so many generations and have it survive physically and be decipherable by a people with few cultural similarities to us. Given this restriction, Sebeok suggested the only possible solution was the formation of a committee of guardians of knowledge. **Its** task would be to dedicate itself to maintaining and passing on the knowledge of the whereabouts and dangers of the nuclear waste deposits. This so- called atomic priesthood would be entrusted with keeping knowledge of this tradition alive through millennia and in developing the tradition into a kind of mythical taboo forbidding people to tamper in any way with the nuclear waste sites. Only the initiated atomic priesthood of experts would have the scientific knowledge to fully understand the danger. Those outside the priesthood would be kept away by a combination of rituals and legends designed to warn off intruders.

This proposal has been criticized because of the possibility of a break in continuity of the original message. Furthermore, there is no guarantee that any warning or **sanction** passed on for millennia would be obeyed, nor that it could survive with its original meaning intact. To counterbalance this possibility, Sebeok's group proposed a "relay system" in which information is passed on over relatively short periods of time, just three generations ahead. The message is then to be renewed and redesigned if necessary for the following three generations and so on over the required time span. In this way information could be relayed into the future and avoid the possibility of physical degradation.

A second defect is more difficult to dismiss, however. This is the problem of social exclusiveness brought about through possession of vital knowledge. Critics point out that the atomic priesthood could use its secret knowledge to control those who are scientifically ignorant. The establishment of such an association of insiders holding powerful knowledge not available except in mythic form to nonmembers would be a dangerous precedent for future social developments.

'barbarism: a state of existence in which the experience, habits, and culture of modern life are absent
'seepage: an amount of liquid or gas that flows through another substance

26. The word "chambers" in the passage is closest in meaning to
cavities
partitions
openings
fissures

27. What problem faced the commission assigned to deal with the burial of nuclear waste?
A How to reduce the radioactive life of nuclear waste materials
B How to notify future generations of the risks of nuclear contamination
C How to form a committee that could adequately express various nuclear risks
D How to choose burial sites so as to minimize dangers to people

28. In paragraph 2, the author explains the possible circumstances of future societies
A to warn us about possible natural catastrophes
B to highlight humankind's inability to resolve problems
C to question the value of our trust in technological advances
D to demonstrate the reason nuclear hazards must be communicated

29. The word "scourges" in the passage is closest in meaning to
A worries
B pressures
C afflictions
D annoyances

30. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.
A A message for future generations must be comprehensible to anyone in the world.
B A universally understandable message must be deciphered for future generations.
C Any message that is globally understandable must be received and deciphered.
D The message that future generations receive and interpret must be dedicated.

31. In paragraph 4, the author mentions the second law of thermodynamics
A to contrast the potential life span of knowledge with that of material objects
B to give the basic scientific reason behind the breakdown of material objects
C to show that knowledge can be sustained over millennia
D to support the view that nuclear waste will disperse with time

32. The word "Its" (Its task would be to dedicate) in the passage refers to
A knowledge
B guardians
C committee
D solution

33. In paragraph 5, why is the proposed committee of guardians referred to as the “atomic priesthood”?
A Because they would be an exclusive religious order
B Because they would develop mythical taboos surrounding their traditions
C Because they would use rituals and legends to maintain their exclusiveness
D Because they would be an exclusive group with knowledge about nuclear waste sites

34. The word "sanction" in the passage is closest in meaning to
A security
B approval
C counsel
D penalty

35. According to the author, why did the task force under Sebeok propose a relay system for passing on information?
A To compensate for the fact that meaning will not be stable over long periods of time
B To show that Sebeok’s ideas created more problems than they solved
C To contrast Sebeok’s ideas with those proposed by his main critics
D To support the belief that breaks in communication are inevitable over time

36. According to paragraph 7, the second defect of the atomic priesthood proposal is that it could lead to
A the possible misuse of exclusive knowledge
B the establishment of a scientifically ignorant society
C the priesthood’s criticism of points concerning vital knowledge
D the nonmembers turning knowledge into dangerous mythical forms

37. All of the following are mentioned in the passage as difficulties in devising a communication system with the future EXCEPT
A the loss of knowledge about today's civilization
B the failure to maintain communication links
C the inability of materials to endure over time
D the exclusiveness of a priesthood

38. Look at the four squares [ ] that indicate where the following sentence could be added to the passage.
Perhaps scientists will find efficient ways to deactivate radioactive materials.
Where would the sentence best fit?
Choose the letter of the square that shows where the sentence should be added.

39. An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage.
Write the letters of the answer choices in the spaces where they belong.

The problem of how to pass on knowledge of the dangers posed by buried radioactive waste was addressed by a commission of experts.

ANSWER CHOICES

A A task force argued that a select group should be entrusted with passing on knowledge of the dangers of radioactive deposits by using a relay system.
B Electricity supplies may not exist in the future, so computers should not be entrusted with storage of vital information.
C Technological improvements will possibly allow future generations to decontaminate nuclear waste.
D The atomic priesthood proposal has been criticized due to its potential for creating a future society divided into those who hold special knowledge and those who don't.
E The atomic priesthood would develop rituals and legends designed to warn off trespassers into the nuclear burial sites.
F Various means of storing and passing on information are unreliable over time because of the difficulty of communicating with future societies and the likely physical decay of storage media.

Источник задания: Cambridge Preparation to the TOEFL

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26 A

When something is put into an underground "chamber," it is put into a large "cavity" or hole that forms a roomy area.

27 B

The commission understood that the waste may be hazardous for people thousands of years in the future and that these future generations need to be warned of the danger.

28 D

The author mentions different circumstances to help the reader understand that even though we think that future societies may be sophisticated, they may not be, and therefore we cannot leave the matter to chance.

29 C

A "scourge" is a source of extensive "affliction" and devastation.

30 A

The message must be understandable to any person no matter what his or her cultural background or knowledge is.

31 B

The author mentions the second law of thermodynamics to explain why materials can't endure.

32 C

The word "its" refers to the committee formed to guard a certain kind of knowledge.

33 D

The committee that guards and passes on specialized knowledge has been called an "atomic priesthood" because it is rather like a priesthood in its exclusiveness and its monopoly of knowledge about nuclear waste sites.

34 D

A "sanction" is a "penalty" used to obtain conformity to someone's wishes. People who do not observe sanctions are punished through legal or moral pressure.

35 A

The idea of a relay system is to pass on information over just a few generations. This would help to prevent the breakdown of communication over long periods of time.

36 A

The author points out that those who have exclusive knowledge could use it to control those who are ignorant.

37 D

While the exclusiveness of the atomic priesthood might lead to other problems, it is not mentioned as a difficulty in devising a communication system with the future. Rather, it is the main proposal put forward for making that communication possible.

38 B

Finding efficient ways to deactivate nuclear waste materials is an example of a technological advance that could be made to solve this problem.

39 A D F

All of the various means of storing and passing on information pose a problem in communicating with the future because of the physical decay of storage media. A relay system could be used in which the knowledge is passed by a selected group of people. However, the proposal has potential problems of creating a divided society.